

Date: Thursday, 26/06/2008 9:57:51 AM
 User: Julie Lecocq

Process Sheet

Customer :	CU-DAR001 Dart Helicopters Services	Drawing Name :	206B AFT X-TUBE
Job Number :	40114		
Estimate Number :	12347		
P.O. Number :		Part Number :	D206667201
This Issue :	26/06/2008	S.O. No. :	
Prsht Rev. :	NC	Drawing Number :	D206-667-241 REV B
First Issue :	//	Project Number :	N/A
Previous Run :	37954	Drawing Revision :	B
		Material :	
Written By :		Due Date :	11/07/2008
Checked & Approved By :	JULIE LECOCQ	Qty:	1 Um: Each
Comment :	Est Rev:F 05.09.01 Add holes for compatibility with Bell Skidtubes KJ/JLM Est Rev:G 08-06-03 update as per DSI9415 (ECN1198) DD verified by:		

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
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1.0	DC	DOCUMENT CONTROL
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**Comment:** DOCUMENT CONTROL

Photocopy bluefile and create labels as per PPP D206-667-201 CHG003

2.0	PACKAGING 1	PACKAGING RESOURCE #1
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**Comment:** PACKAGING RESOURCE #1

3.0	D206667201TRN	Crosstube Turning Detail
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**Comment:** Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

CROSSTUBE TURNING DETAIL

batch B38621

DP 8-7-15

4.0	BENDING	BENDING MACHINE - SKIDTUBES
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**Comment:** BENDING MACHINE

Bend tube as per Dwg D206-667-241 using CNC bender program 206B-AF and Folio FT

DP 8-7-15

5.0	QC15	DIMENSIONAL CHECK OF X-TUBES
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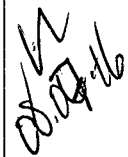
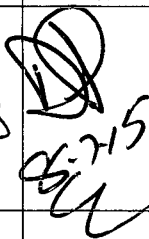
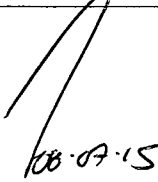
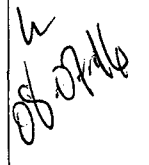



PO

Comment: DIMENSIONAL CHECK OF X-TUBES

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D206667-201 PAR #: _____ Fault Category: _____ NCR: Yes ☐ No ☒ DQA: PD Date: 08/07/15
 QA: N/C Closed: _____ Date: _____

NCR: <u>40114</u>		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
08-07-15	4-0	<ul style="list-style-type: none"> - Tube was used for bend development - 1 side scrap - 2nd side not acceptable. - dimensions: radius out of tolerance. 	 08-07-15	SCRAP: Donate to Eng. for show or testing	 08-07-15	 08-07-15	 08-07-15	 08-07-15

NOTE: Date & initial all entries

Date: Thursday, 26/06/2008 9:57:51 AM
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Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 206B AFT X-TUBE

Job Number: 40114

Part Number: D206667201

Job Number:



Seq. #:

Machine Or Operation:

Description :

6.0

CROSSTUBES

CROSSTUBES RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Drill pilot holes (3/16") as per Dwg D206-667-241 using drill Jig DT8575 & DT8576

2-Drill & ream holes as per Dwg D206-667-241 using drill Jig DT8575 & DT8576.
(DRILL 3 HOLES ON BOTH SIDES)

3-Flip tube and switch drilling Jigs from right to left, left to right. Locate tube using "T" pins off holes drilled in previous step.

4-Drill pilot holes (3/16") as per Dwg D206-667-241 using drill Jig DT8575 & DT8576

5-Drill & ream holes as per Dwg D206-667-241 using drill Jig DT8575 & DT8576. Check dimensions between holes on all four sides to ensure proper alignment. Use DT8583 & 8584 SUPPORT Jigs.
(DRILL 3 HOLES ON BOTH SIDES)

6-Drill rivet holes as per Dwg D206-667-241 using drill Jig DT8788

7-C'sink holes as per Dwg D206-667-241

8-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D206-667-241

9-Scribe part # and batch # using vibrating stylus as per Dwg D206-667-241
Inside of Cuff(Donot engrave on outside of tube)

7.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

8.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

9.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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User: Julie Lecocq

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 206B AFT X-TUBE

Job Number: 40114

Part Number: D206667201

Job Number:



Seq. #:	Machine Or Operation:	Description :
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10.0	OUTSIDE SERV.10	OUTSIDE SERVICES -skids
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Comment: Sub-Contracting OUTSIDE SERVICES
Liquid Penetrant Inspection as per QSI 038Or
Issue P/O: _____
LPI as per ASTM 1417
Level 2 Attach copy of NDT results to work order

11.0	PACKAGING 1	PACKAGING RESOURCE #1
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Comment: PACKAGING RESOURCE #1
Inspect for transit damage
Ensure copy of NDT results attached to work order.

12.0	QC6	DIMENSIONAL CHECK
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Comment: Inspect for damage & ensure results are as per Dwg D206-667-103

13.0	SPRAY PAINTING	SPRAY PAINTING
------	----------------	----------------



Comment: SPRAY PAINTING

1-Mask Threaded holes

2-Prime inside and outside crosstube as per QSI 005 4.2

3-Paint outside crosstube with White Imron as per QSI 005 4.2

14.0	QC14	INSPECT SPRAY PAINT
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Comment: Inspect Spray Paint
Wrap in plastic bag to protect from scratches

15.0	D3595075395	RUBBER CUSHION .75" x 3.95
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Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)
RUBBER CUSHION .75" x 3.95
batch: _____

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Thursday, 26/06/2008 9:57:52 AM
User: Julie Lecocq

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 206B AFT X-TUBE

Job Number: 40114

Part Number: D206667201

Job Number:



Seq. #:	Machine Or Operation:	Description :
---------	-----------------------	---------------

16.0	D28911	2.25 Support
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Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty Part number Description Batch

2 D2891-1 Support

17.0	MS2192020	Clamp (per MIL-DTL-8783C)
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Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick:

Qty Part number Description Batch

4 MS21920-20 Clamp

18.0	CROSSTUBES	CROSSTUBES RESOURCE 1
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Comment: LANDING GEAR RESOURCE 1

1-Install abrasion strips as per QSI 035 using DT8579.

2-Install supports and clamps as per Dwg D206-667-241. Torque clamps to 80-100 in lb

19.0	QC5	INSPECT WORK TO CURRENT STEP
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Comment: INSPECT WORK TO CURRENT STEP

20.0	PACKAGING 1	PACKAGING RESOURCE #1
------	-------------	-----------------------



Comment: PACKAGING RESOURCE #1

Pick Packing Kit

21.0	AN532A	Bolt
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Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Bolt

22.0	D2872043	Nut Plate Assembly
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Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty Part number Description Batch

2 D2872-043 Nut Plate

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Thursday, 26/06/2008 9:57:52 AM
User: Julie Lecocq

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 206B AFT X-TUBE

Job Number: 40114

Part Number: D206667201

Job Number:



Seq. #:

Machine Or Operation:

Description :

23.0

D2872045

Nut Plate Assembly



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty Part number Description Batch

2 D2872-045 Nut Plate _____

24.0

AN510A

Bolt



Comment: Qty.: 10.0000 Each(s)/Unit Total : 10.0000 Each(s)

Pick:Packing Kit

Qty Part number Description Batch

10 AN5-10A Bolt _____

25.0

AN530A

BOLT



Comment: Qty.: 10.0000 Each(s)/Unit Total : 10.0000 Each(s)

Pick:Packing Kit

Qty Part number Description Batch

10 AN5-30A Bolt _____

26.0

AN960JD516

Washer



Comment: Qty.: 20.0000 Each(s)/Unit Total : 20.0000 Each(s)

Pick:Packing Kit

Qty Part number Description Batch

20 AN960JD516 Washer _____

27.0

MS21042L5

Nut



Comment: Qty.: 10.0000 Each(s)/Unit Total : 10.0000 Each(s)

Pick:Packing Kit

Qty Part number Description Batch

10 MS21042L5 NUT _____

28.0

QC4

INSPECT 100% KITS FOR COMPLETENESS



Comment: INSPECT 100% KITS FOR COMPLETENESS

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Thursday, 26/06/2008 9:57:52 AM
User: Julie Lecocq

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 206B AFT X-TUBE

Job Number: 40114

Part Number: D206667201

Job Number:



Seq. #:

Machine Or Operation:

Description :

29.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D206-667-201

Location: _____

PPP Rev: _____

30.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

Job Completion



00233A MF 08-07-15

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

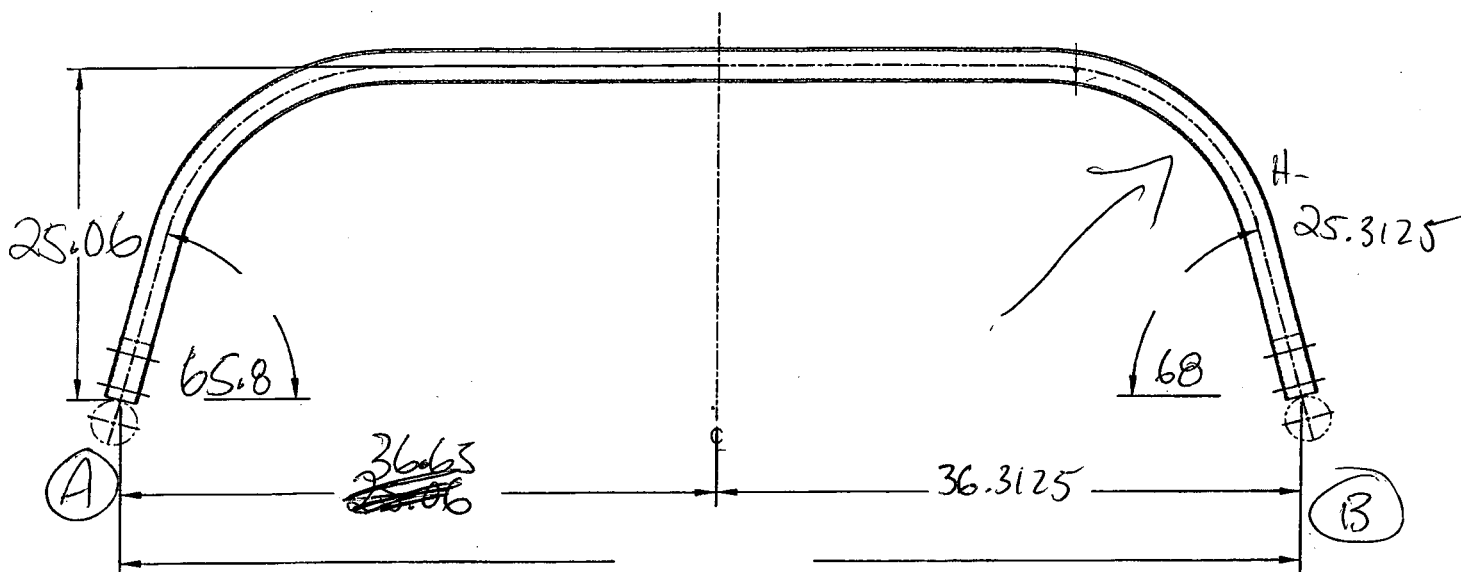
QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order:	40114
Description: Crosstube High Aft (206B)		Part Number:	D206-667-201
Inspection Dwg: D206-667-241 Rev: B		Page 1 of 1	

Required Dimension	Min	Max
Height	24.98	25.10
1/2 Span	36.54	36.66
Angle	65	67
Total Span	73.08	73.32



Comments
Dimensions of radius for side B are not good.
Scrap tube.

QC15 Inspection	
Date	

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	07.12.04	24-98 was 24.48	KJ/JM	

DART AEROSPACE LTD		Work Order: 40114
Description: Crosstube Assembly		Part Number: D206-667-241
Inspection Dwg: D206-667-241 Rev: B		Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article
 ☐ Prototype

Inspection Sheet Drawing Dimension		Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	30° x 0.500	+/-0.010					
	0.250	+/-0.010					
	2.240	+0.005/-0.000					
	4.438	+/-0.030					
	1.780	+0.005/-0.000					
	R0.063	+/-0.010					
	1.851	+0.005/-0.000					
	1.928	+0.005/-0.000					
	2.005	+0.005/-0.000					
	2.082	+0.005/-0.000					
	2.159	+0.005/-0.000					
	2.190	+0.005/-0.000					
SIDE B	30° x 0.500	+/-0.010					
	0.250	+/-0.010					
	2.240	+0.005/-0.000					
	4.438	+/-0.030					
	1.780	+0.005/-0.000					
	R0.063	+/-0.010					
	1.851	+0.005/-0.000					
	1.928	+0.005/-0.000					
	2.005	+0.005/-0.000					
	2.082	+0.005/-0.000					
	2.159	+0.005/-0.000					
	2.190	+0.005/-0.000					
	100.60	+/-0.020					

Measured by:		Audited by:		Prototype Approval:	N/A
Date:		Date:		Date:	N/A

Rev	Date	Change	Revised by	Approved
A	06.10.16	New Issue (P/O D206-667-201)	KJ/JLM	BE



DESIGN PH	DRAWN BY PH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED [Signature]	APPROVED [Signature]	DRAWING NO. D206-667-241	REV. B SHEET 1 OF 3
DATE 05.02.04		TITLE CROSSTUBE ASS'Y (206B HIGH AFT)	SCALE NTS
A	00.11.17	NEW ISSUE	
B	05.02.04	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	

RELEASED
05-06-16 [Signature]

Qty	Part Number	Description
X	D206-667-241	CROSSTUBE ASSEMBLY (206B HIGH AFT)
1	D6003-102	CROSSTUBE
2	D2856-400-694	ABRASION STRIP
2	D2891-1	SUPPORT
4	MS21920-20	CLAMP

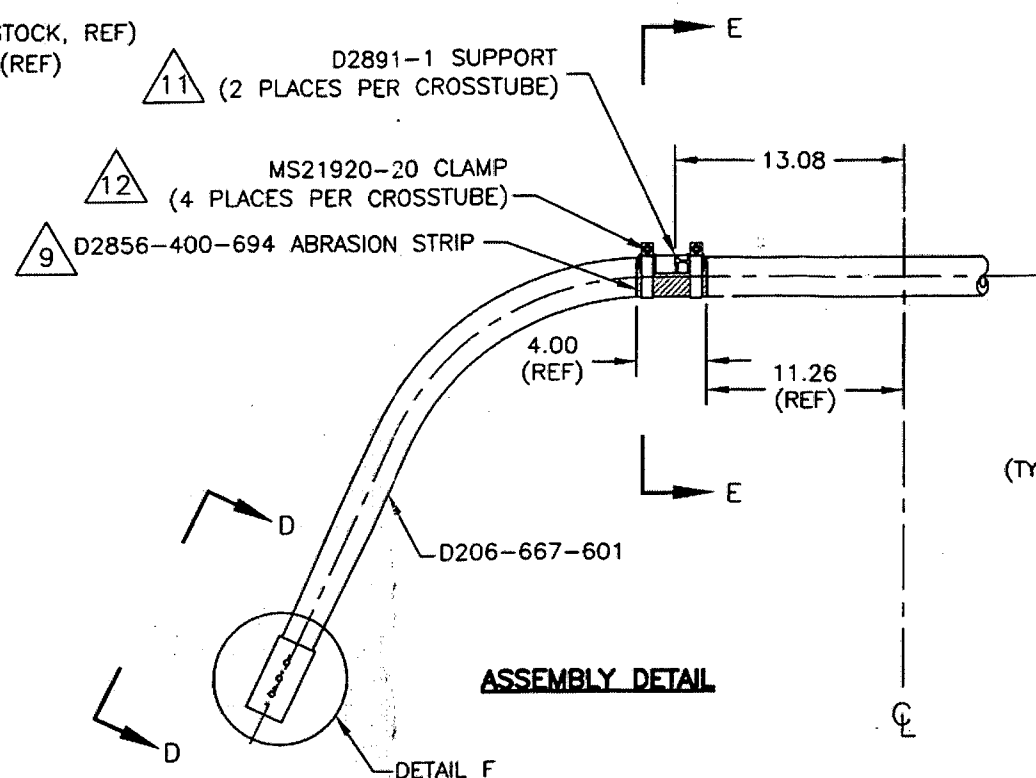
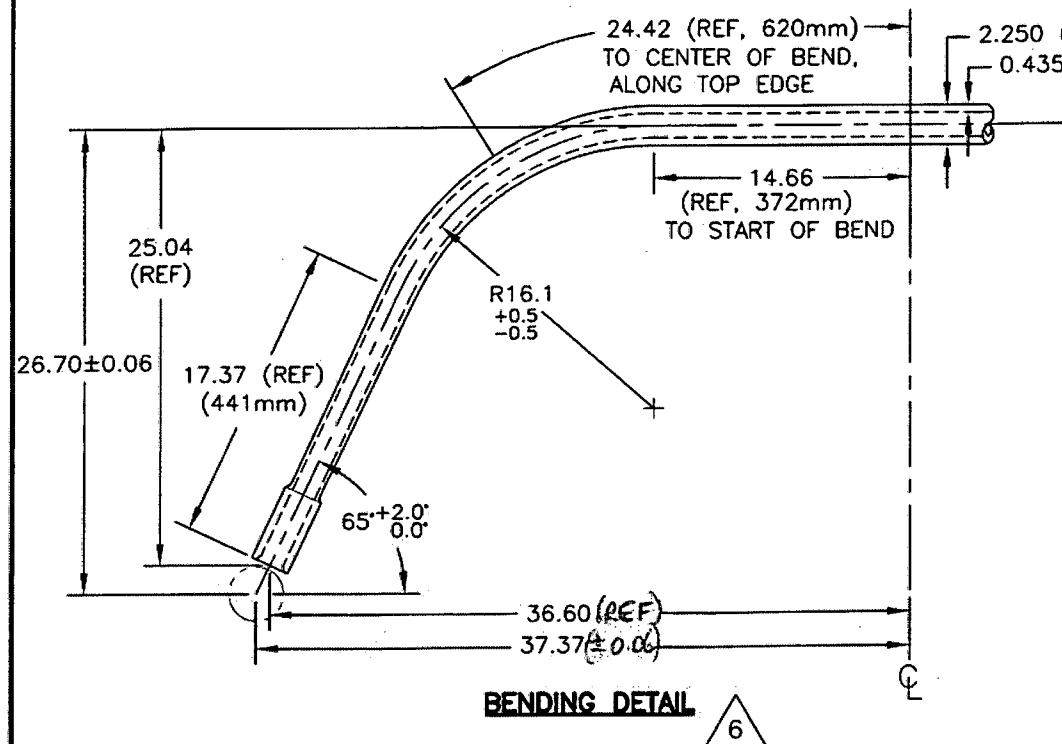
GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) MATERIAL: MANUFACTURED FROM D6003-102
FINISHED LENGTH = 100.60 ± 0.020
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 12 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2856-400-694 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D2891-1 SUPPORT, PER QSI 035.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) IT IS OPTIONAL TO SEAL EDGES OF SUPPORTS AND ABRASION STRIP USING SIKAFLEX-241/291 SEALANT.
- 12) TORQUE CLAMPS 80 TO 100 IN-LB.

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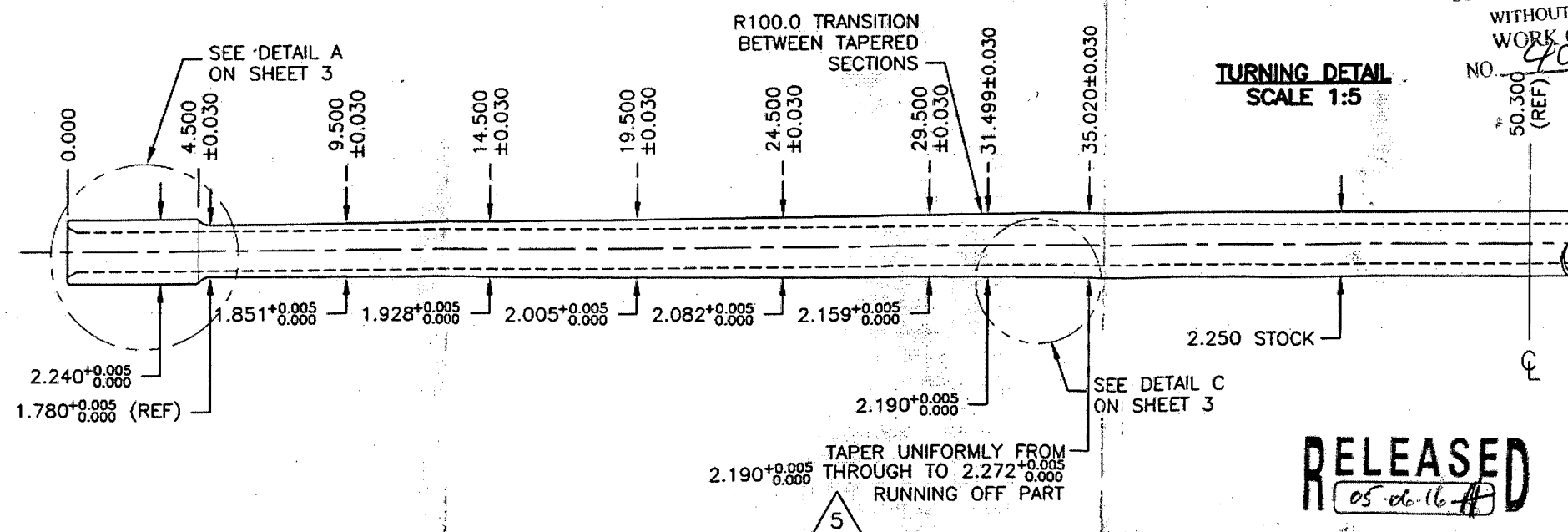
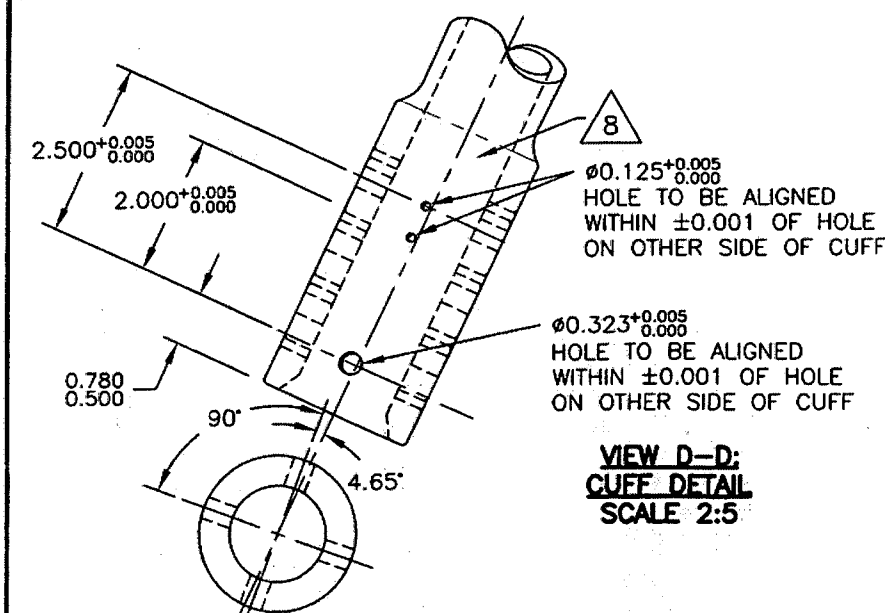
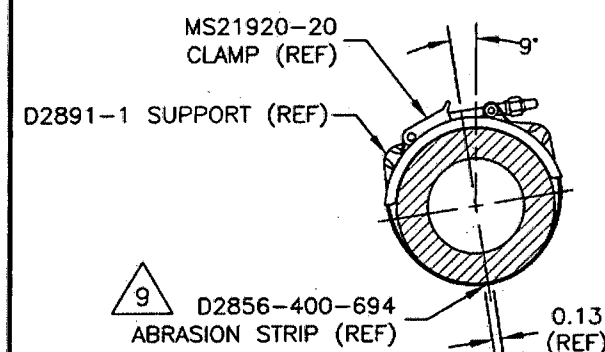


B $\phi 0.323^{+0.005}_{-0.000}$
HOLE TO BE ALIGNED WITHIN
 ± 0.001 OF HOLE ON OTHER
SIDE OF CUFF
(TYP 6 PLACES PER CUFF)

PILOT $\phi 0.128$
C'SINK $\phi 0.225 \times 100$
(TYP 8 PLACES PER CUFF)

DETAIL F
SCALE 2:5

TURNING DETAIL
SCALE 1:5



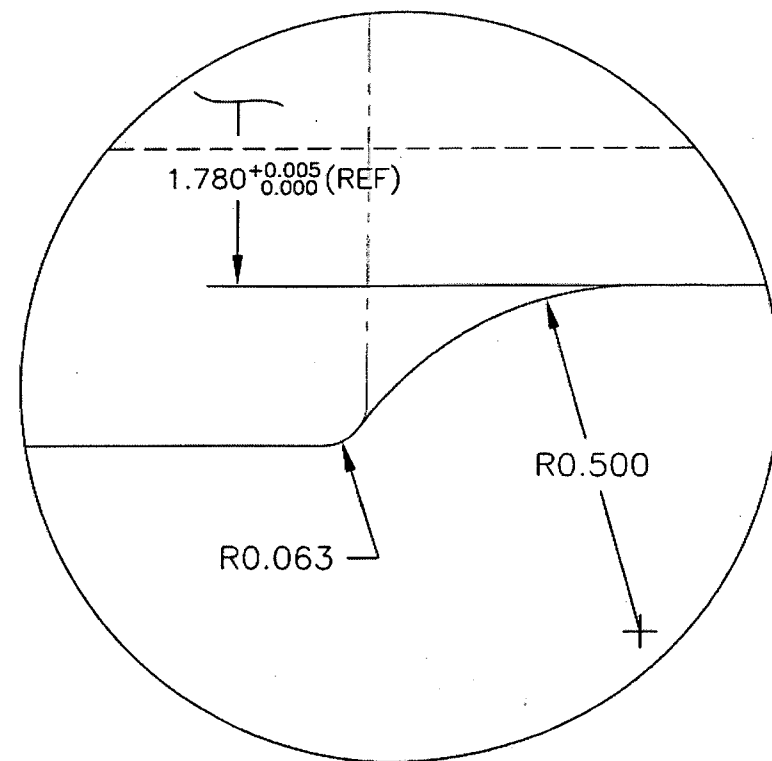
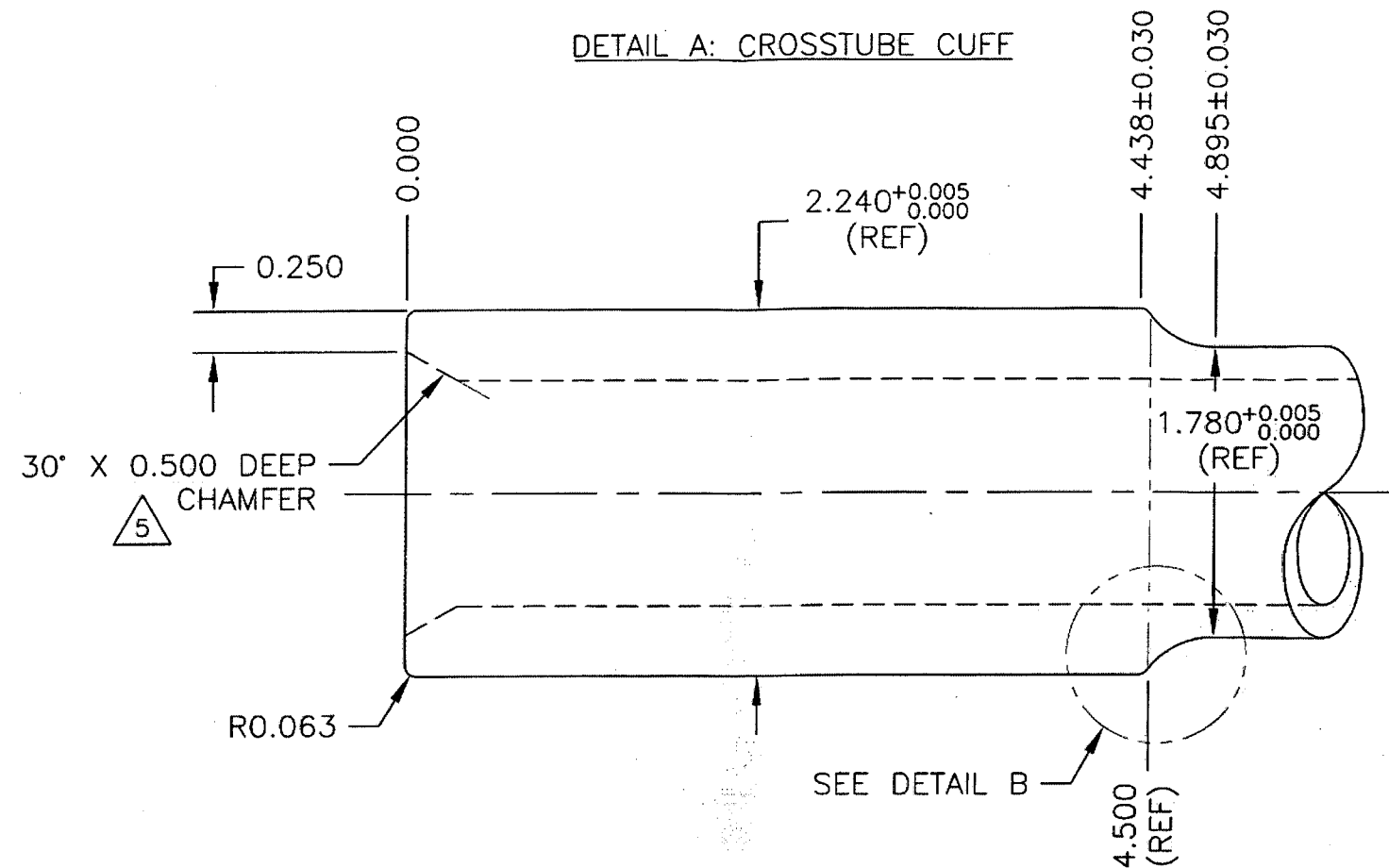
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		DATE		D206-667-241	SHEET 2 OF 3
		05.02.04		TITLE	SCALE
				CROSSTUBE ASS'Y (206B HIGH AFT)	1:10

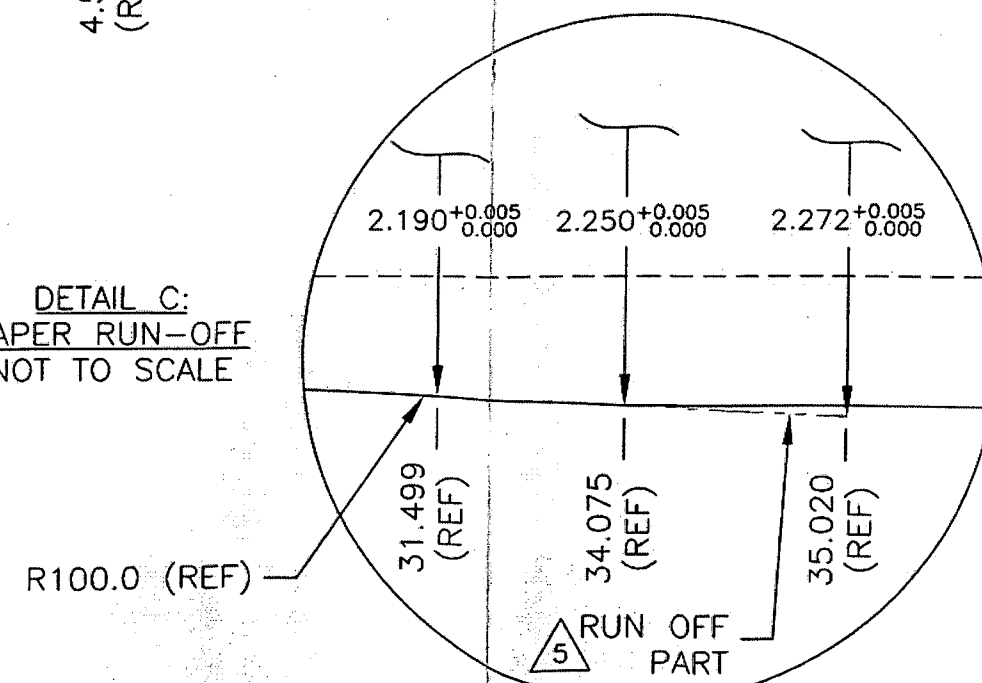
RELEASED
05-06-16

DETAIL A: CROSSTUBE CUFF



DETAIL B: CUFF
TRANSITION
SCALE 4:1

DETAIL C:
TAPER RUN-OFF
NOT TO SCALE



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		DATE	05.02.04			D206-667-241	SHEET 3 OF 3
				TITLE		CROSSTUBE ASS'Y (206B HIGH AFT)	SCALE 1:1

